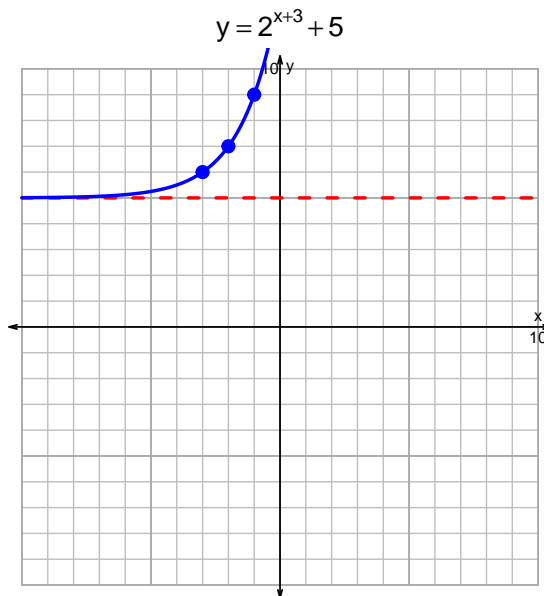
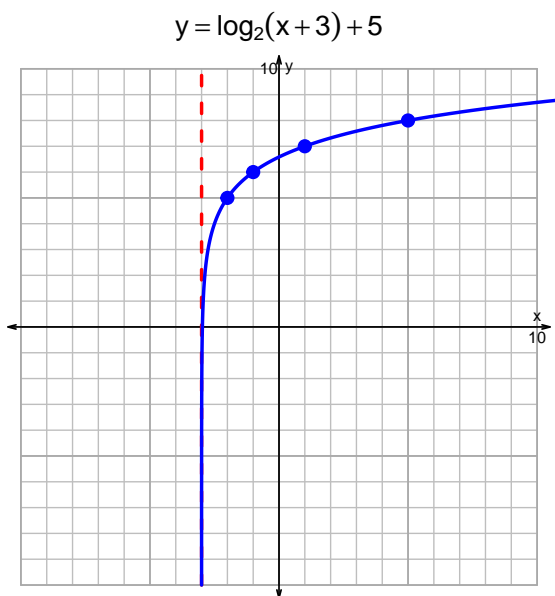


Name: _____

Date: _____

s18QUIZ: EXP LOG (SOLUTION v1)

- Graph $y = \log_2(x + 3) + 5$ and $y = 2^{x+3} + 5$ on the grids below. Also, draw any asymptotes with dotted lines.



- Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$11 = \left(\frac{3}{7}\right) \cdot 2^{5t/4}$$

Divide both sides by $\frac{3}{7}$.

$$\frac{11 \cdot 7}{3} = 2^{5t/4}$$

Take log, base 2, of both sides.

$$\log_2 \left(\frac{11 \cdot 7}{3} \right) = \frac{5t}{4}$$

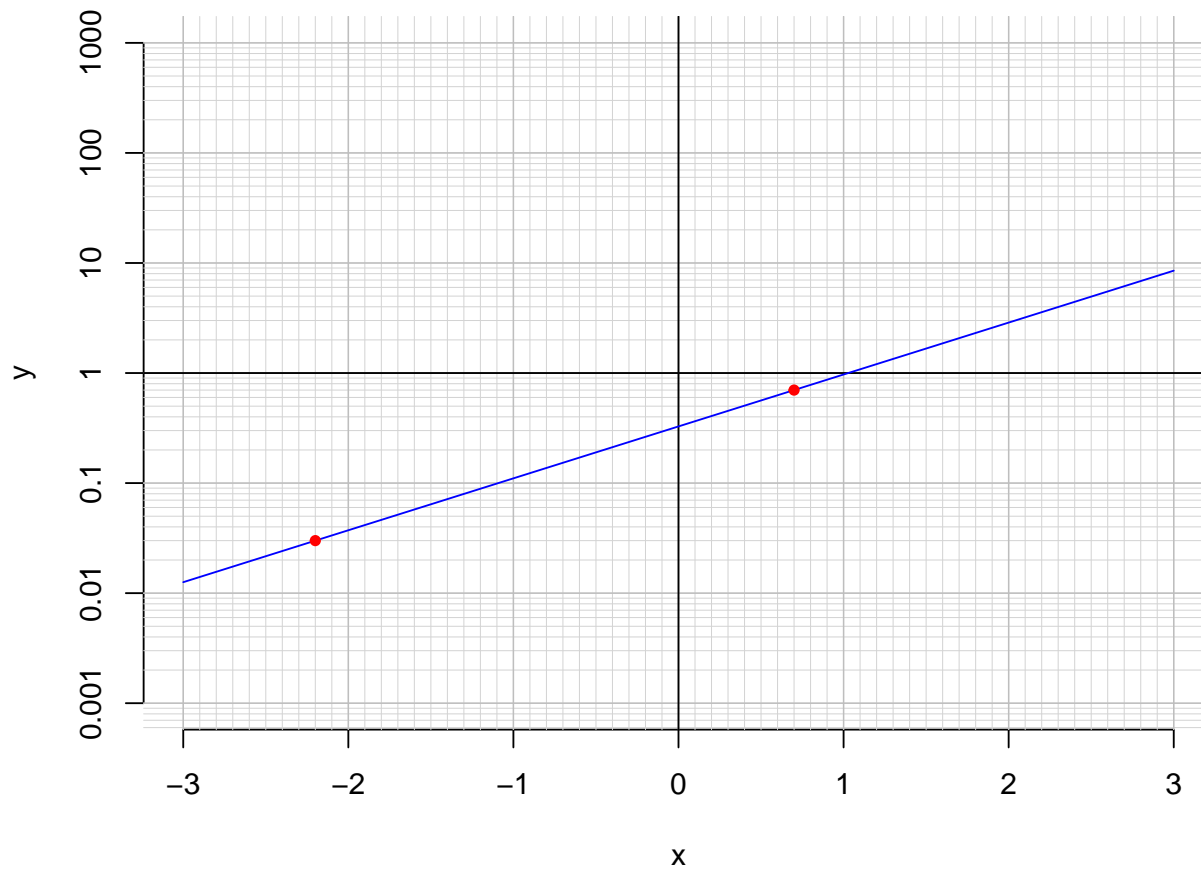
Divide both sides by $\frac{5}{4}$.

$$\frac{4}{5} \cdot \log_2 \left(\frac{11 \cdot 7}{3} \right) = t$$

Switch sides.

$$t = \frac{4}{5} \cdot \log_2 \left(\frac{11 \cdot 7}{3} \right)$$

3. An exponential function $f(x) = 0.327 \cdot e^{1.09x}$ is graphed below on a semi-log plot.



- a. Using the plot above, evaluate $f(0.7)$.

$$f(0.7) = 1$$

- b. Express $f^{-1}(x)$, the inverse of f .

$$f^{-1}(x) = \frac{1}{1.09} \cdot \ln\left(\frac{x}{0.327}\right)$$

- c. Using the plot above, evaluate $f^{-1}(0.03)$.

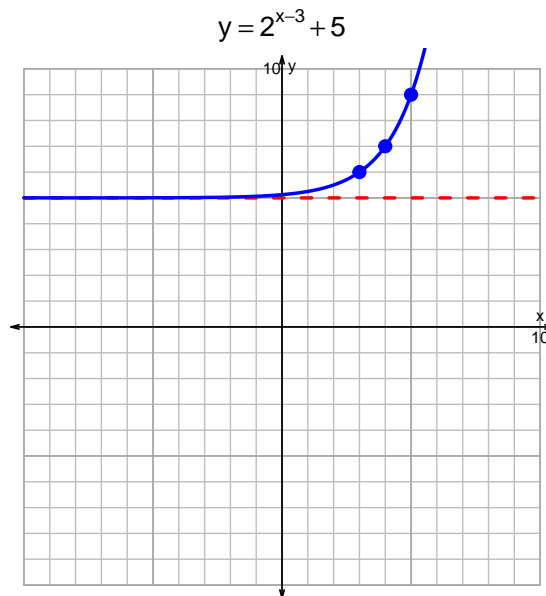
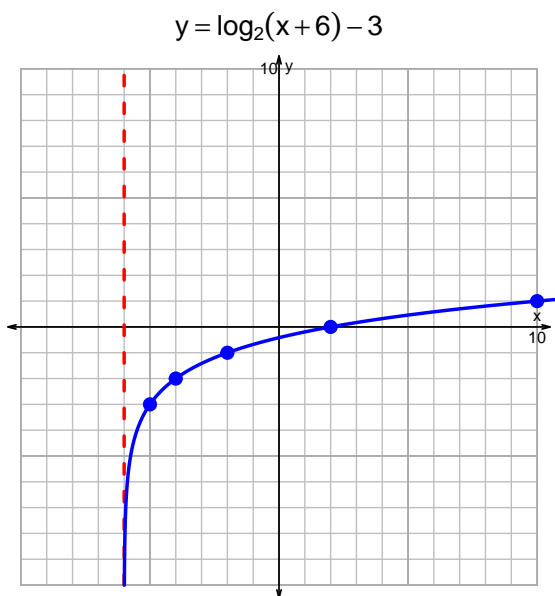
$$f^{-1}(0.03) = -2.2$$

Name: _____

Date: _____

s18QUIZ: EXP LOG (SOLUTION v2)

1. Graph $y = \log_2(x + 6) - 3$ and $y = 2^{x-3} + 5$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$13 = \left(\frac{4}{5}\right) \cdot 2^{3t/7}$$

Divide both sides by $\frac{4}{5}$.

$$\frac{13 \cdot 5}{4} = 2^{3t/7}$$

Take log, base 2, of both sides.

$$\log_2 \left(\frac{13 \cdot 5}{4} \right) = \frac{3t}{7}$$

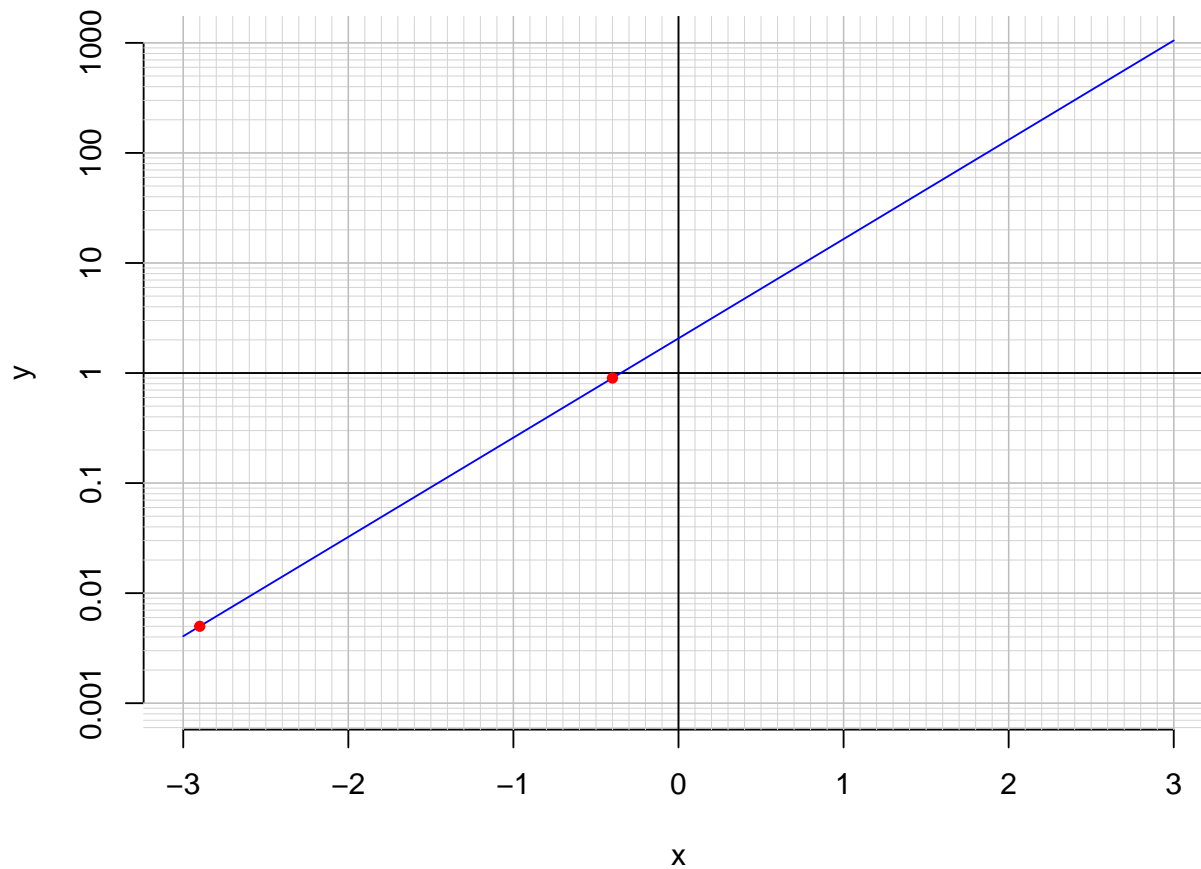
Divide both sides by $\frac{3}{7}$.

$$\frac{7}{3} \cdot \log_2 \left(\frac{13 \cdot 5}{4} \right) = t$$

Switch sides.

$$t = \frac{7}{3} \cdot \log_2 \left(\frac{13 \cdot 5}{4} \right)$$

3. An exponential function $f(x) = 2.07 \cdot e^{2.08x}$ is graphed below on a semi-log plot.



- a. Using the plot above, evaluate $f(-0.4)$.

$$f(-0.4) = 0.9$$

- b. Express $f^{-1}(x)$, the inverse of f .

$$f^{-1}(x) = \frac{1}{2.08} \cdot \ln\left(\frac{x}{2.07}\right)$$

- c. Using the plot above, evaluate $f^{-1}(0.005)$.

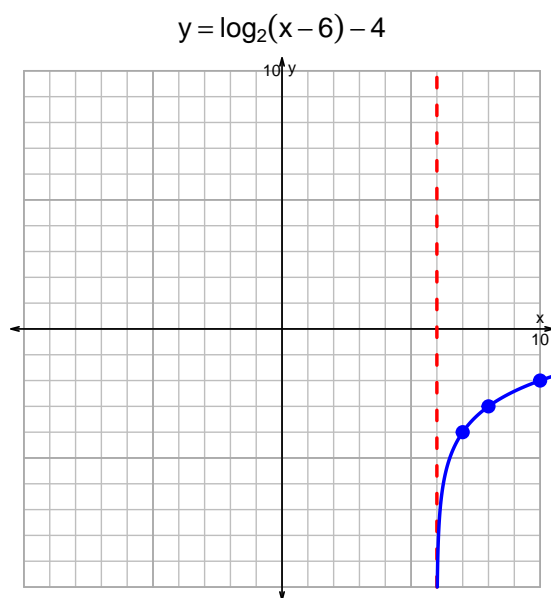
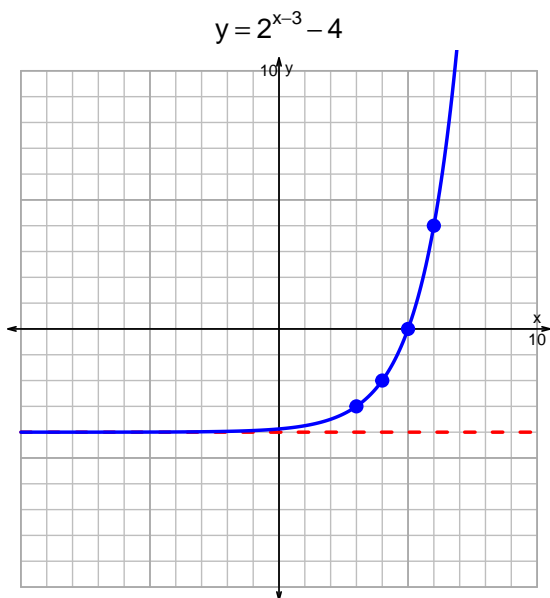
$$f^{-1}(0.005) = -2.9$$

Name: _____

Date: _____

s18QUIZ: EXP LOG (SOLUTION v3)

1. Graph $y = 2^{x-3} - 4$ and $y = \log_2(x - 6) - 4$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$13 = \left(\frac{4}{5}\right) \cdot 10^{7t/3}$$

Divide both sides by $\frac{4}{5}$.

$$\frac{13 \cdot 5}{4} = 10^{7t/3}$$

Take log, base 10, of both sides.

$$\log_{10} \left(\frac{13 \cdot 5}{4} \right) = \frac{7t}{3}$$

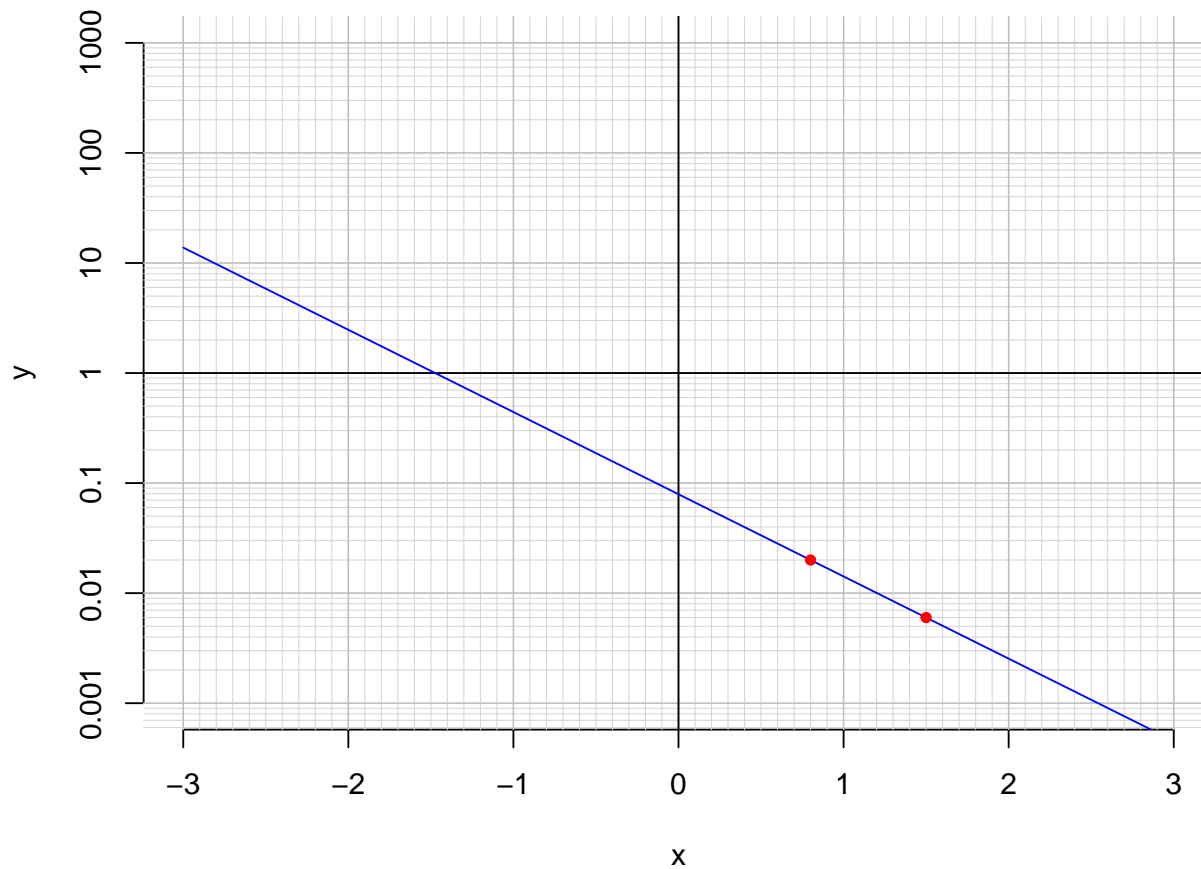
Divide both sides by $\frac{7}{3}$.

$$\frac{3}{7} \cdot \log_{10} \left(\frac{13 \cdot 5}{4} \right) = t$$

Switch sides.

$$t = \frac{3}{7} \cdot \log_{10} \left(\frac{13 \cdot 5}{4} \right)$$

3. An exponential function $f(x) = 0.0792 \cdot e^{-1.72x}$ is graphed below on a semi-log plot.



- a. Using the plot above, evaluate $f(1.5)$.

$$f(1.5) = 0.006$$

- b. Express $f^{-1}(x)$, the inverse of f .

$$f^{-1}(x) = \frac{-1}{1.72} \cdot \ln\left(\frac{x}{0.0792}\right)$$

- c. Using the plot above, evaluate $f^{-1}(0.02)$.

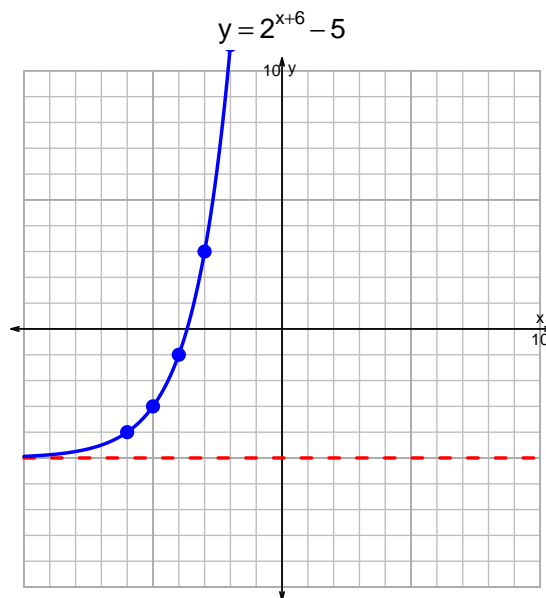
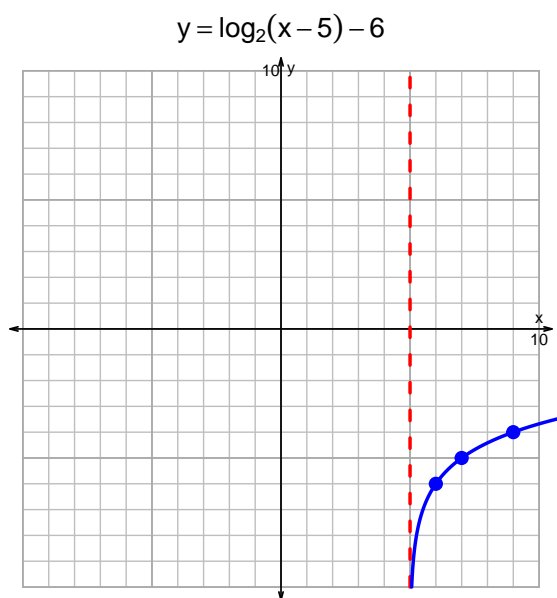
$$f^{-1}(0.02) = 0.8$$

Name: _____

Date: _____

s18QUIZ: EXP LOG (SOLUTION v4)

- Graph $y = \log_2(x - 5) - 6$ and $y = 2^{x+6} - 5$ on the grids below. Also, draw any asymptotes with dotted lines.



- Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$17 = \left(\frac{4}{7}\right) \cdot 10^{-5t/3}$$

Divide both sides by $\frac{4}{7}$.

$$\frac{17 \cdot 7}{4} = 10^{-5t/3}$$

Take log, base 10, of both sides.

$$\log_{10} \left(\frac{17 \cdot 7}{4} \right) = \frac{-5t}{3}$$

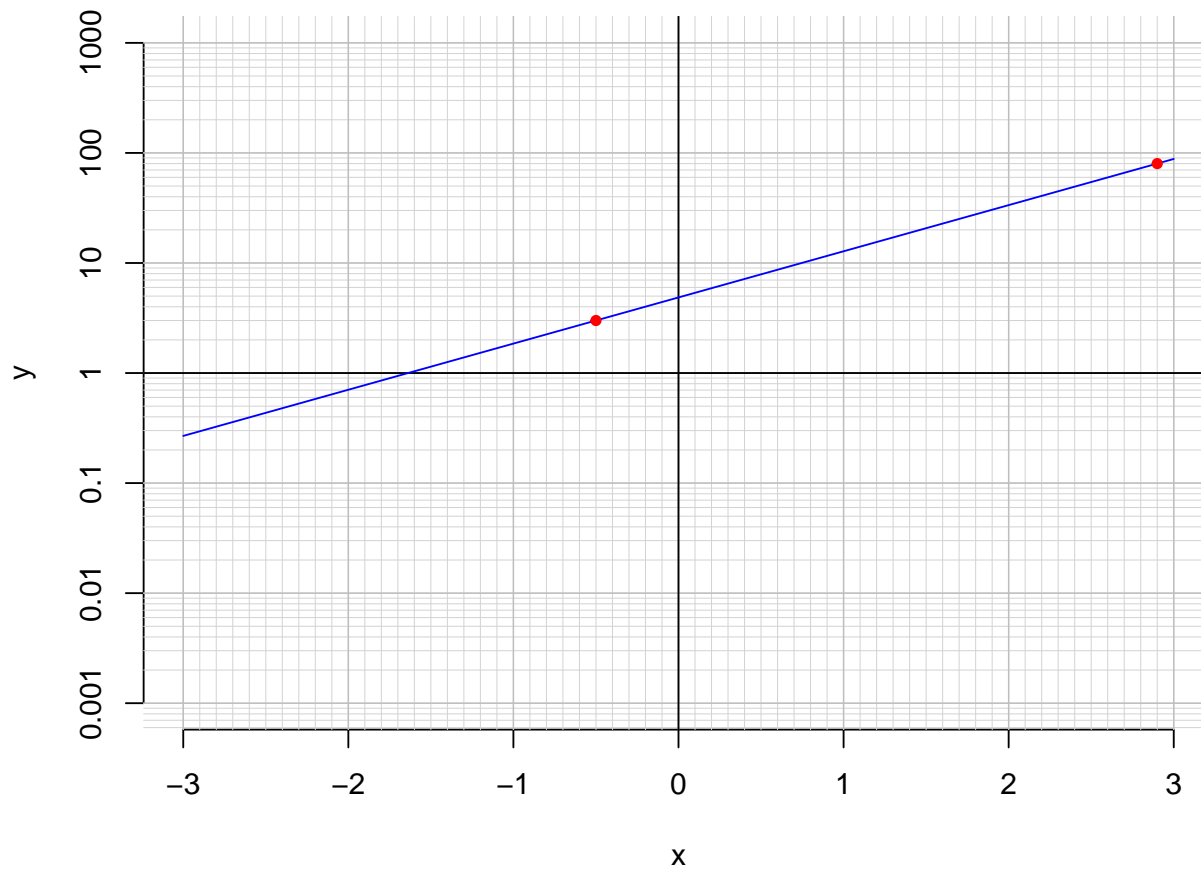
Divide both sides by $\frac{-5}{3}$.

$$\frac{-3}{5} \cdot \log_{10} \left(\frac{17 \cdot 7}{4} \right) = t$$

Switch sides.

$$t = \frac{-3}{5} \cdot \log_{10} \left(\frac{17 \cdot 7}{4} \right)$$

3. An exponential function $f(x) = 4.86 \cdot e^{0.966x}$ is graphed below on a semi-log plot.



- a. Using the plot above, evaluate $f(-0.5)$.

$$f(-0.5) = 3$$

- b. Express $f^{-1}(x)$, the inverse of f .

$$f^{-1}(x) = \frac{1}{0.966} \cdot \ln\left(\frac{x}{4.86}\right)$$

- c. Using the plot above, evaluate $f^{-1}(80)$.

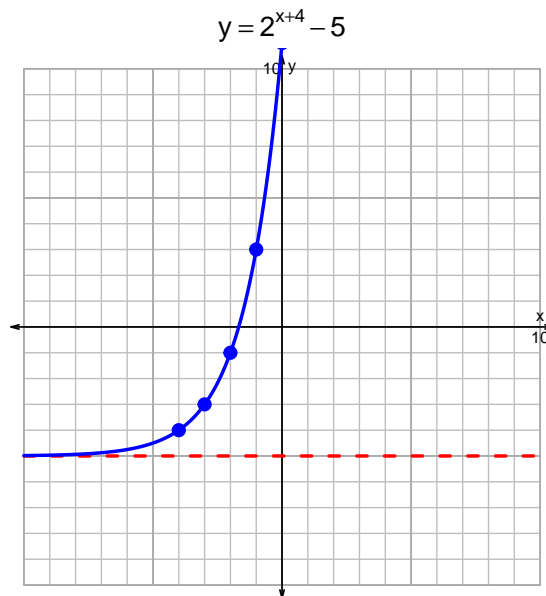
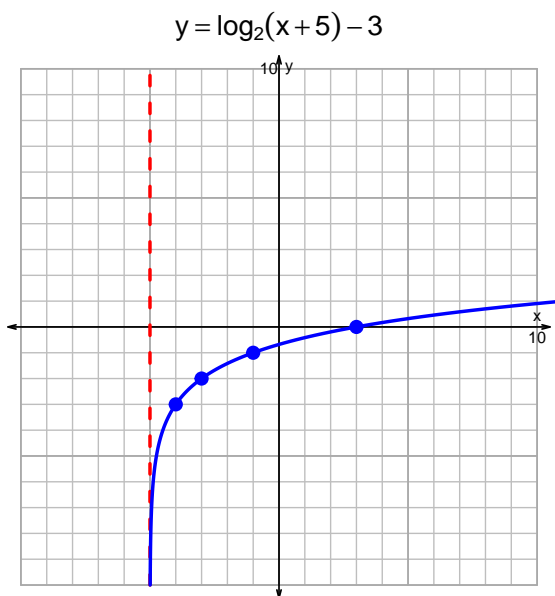
$$f^{-1}(80) = 2.9$$

Name: _____

Date: _____

s18QUIZ: EXP LOG (SOLUTION v5)

1. Graph $y = \log_2(x + 5) - 3$ and $y = 2^{x+4} - 5$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$-13 = \left(\frac{-5}{7}\right) \cdot 2^{-4t/3}$$

Divide both sides by $\frac{-5}{7}$.

$$\frac{13 \cdot 7}{5} = 2^{-4t/3}$$

Take log, base 2, of both sides.

$$\log_2 \left(\frac{13 \cdot 7}{5} \right) = \frac{-4t}{3}$$

Divide both sides by $\frac{-4}{3}$.

$$\frac{-3}{4} \cdot \log_2 \left(\frac{13 \cdot 7}{5} \right) = t$$

Switch sides.

$$t = \frac{-3}{4} \cdot \log_2 \left(\frac{13 \cdot 7}{5} \right)$$

3. An exponential function $f(x) = 12.5 \cdot e^{-2.91x}$ is graphed below on a semi-log plot.



- a. Using the plot above, evaluate $f(1.9)$.

$$f(1.9) = 0.05$$

- b. Express $f^{-1}(x)$, the inverse of f .

$$f^{-1}(x) = \frac{-1}{2.91} \cdot \ln\left(\frac{x}{12.5}\right)$$

- c. Using the plot above, evaluate $f^{-1}(40)$.

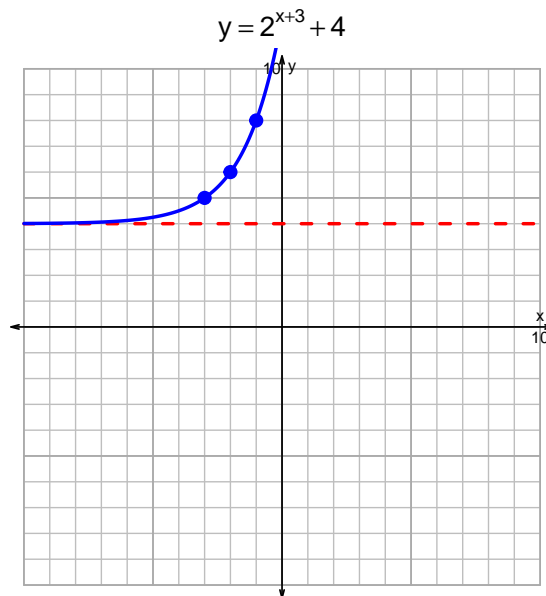
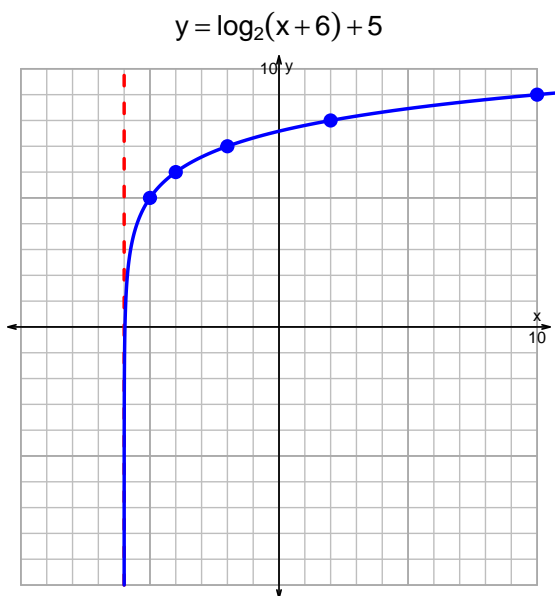
$$f^{-1}(40) = -0.4$$

Name: _____

Date: _____

s18QUIZ: EXP LOG (SOLUTION v6)

1. Graph $y = \log_2(x + 6) + 5$ and $y = 2^{x+3} + 4$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$11 = \left(\frac{4}{5}\right) \cdot 10^{-3t/7}$$

Divide both sides by $\frac{4}{5}$.

$$\frac{11 \cdot 5}{4} = 10^{-3t/7}$$

Take log, base 10, of both sides.

$$\log_{10} \left(\frac{11 \cdot 5}{4} \right) = \frac{-3t}{7}$$

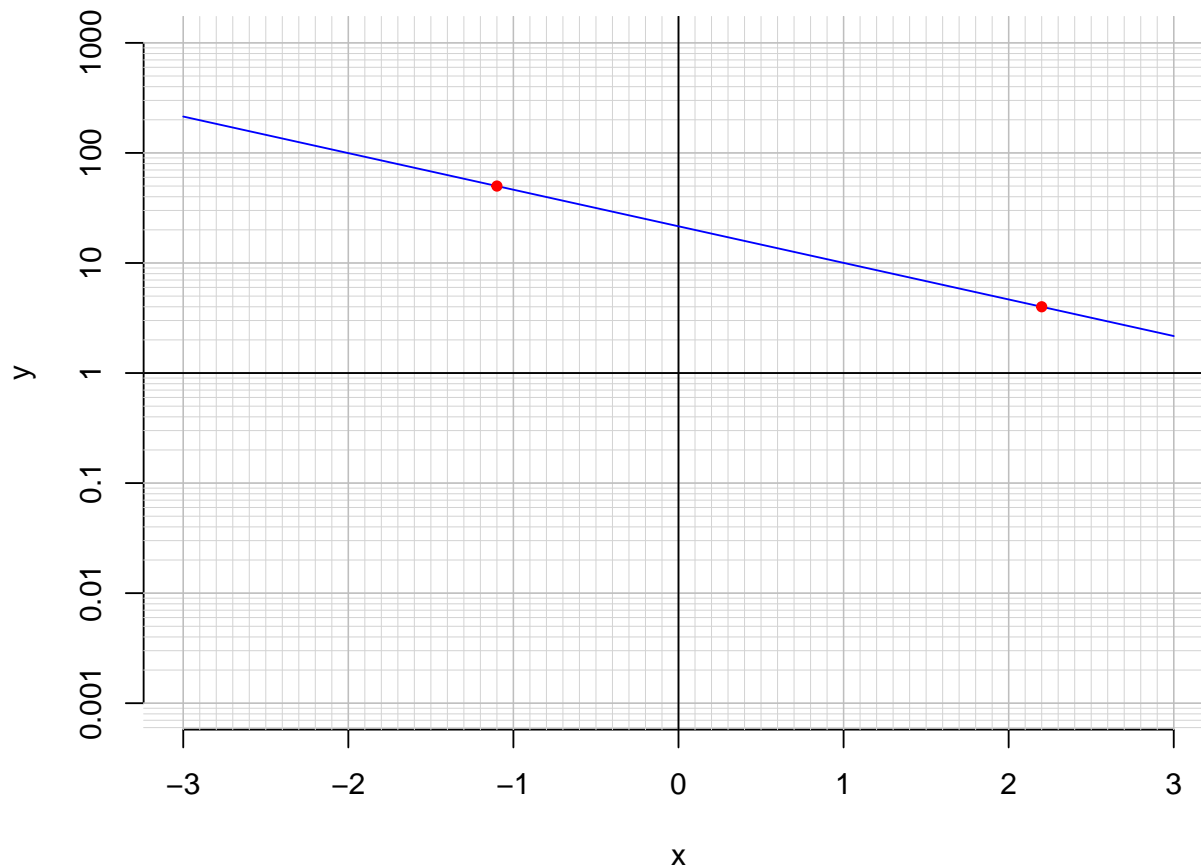
Divide both sides by $\frac{-3}{7}$.

$$\frac{-7}{3} \cdot \log_{10} \left(\frac{11 \cdot 5}{4} \right) = t$$

Switch sides.

$$t = \frac{-7}{3} \cdot \log_{10} \left(\frac{11 \cdot 5}{4} \right)$$

3. An exponential function $f(x) = 21.5 \cdot e^{-0.765x}$ is graphed below on a semi-log plot.



- a. Using the plot above, evaluate $f(-1.1)$.

$$f(-1.1) = 50$$

- b. Express $f^{-1}(x)$, the inverse of f .

$$f^{-1}(x) = \frac{-1}{0.765} \cdot \ln\left(\frac{x}{21.5}\right)$$

- c. Using the plot above, evaluate $f^{-1}(4)$.

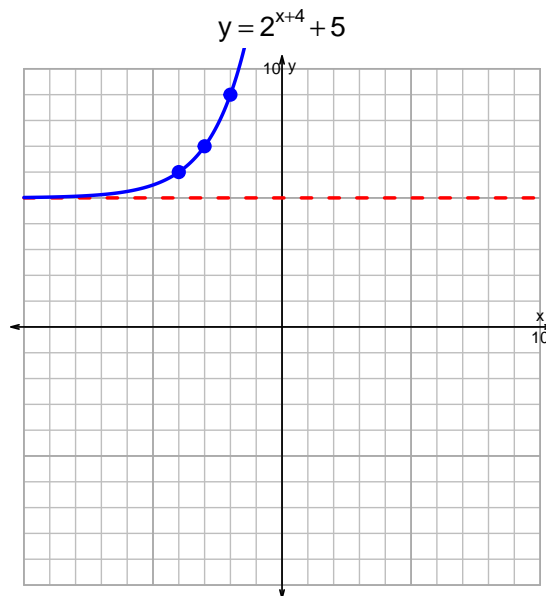
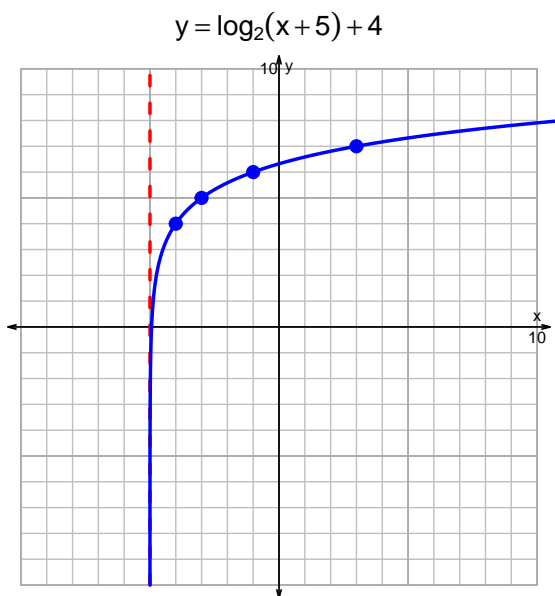
$$f^{-1}(4) = 2.2$$

Name: _____

Date: _____

s18QUIZ: EXP LOG (SOLUTION v7)

1. Graph $y = \log_2(x + 5) + 4$ and $y = 2^{x+4} + 5$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$-17 = \left(\frac{-5}{4}\right) \cdot 10^{3t/7}$$

Divide both sides by $\frac{-5}{4}$.

$$\frac{17 \cdot 4}{5} = 10^{3t/7}$$

Take log, base 10, of both sides.

$$\log_{10} \left(\frac{17 \cdot 4}{5} \right) = \frac{3t}{7}$$

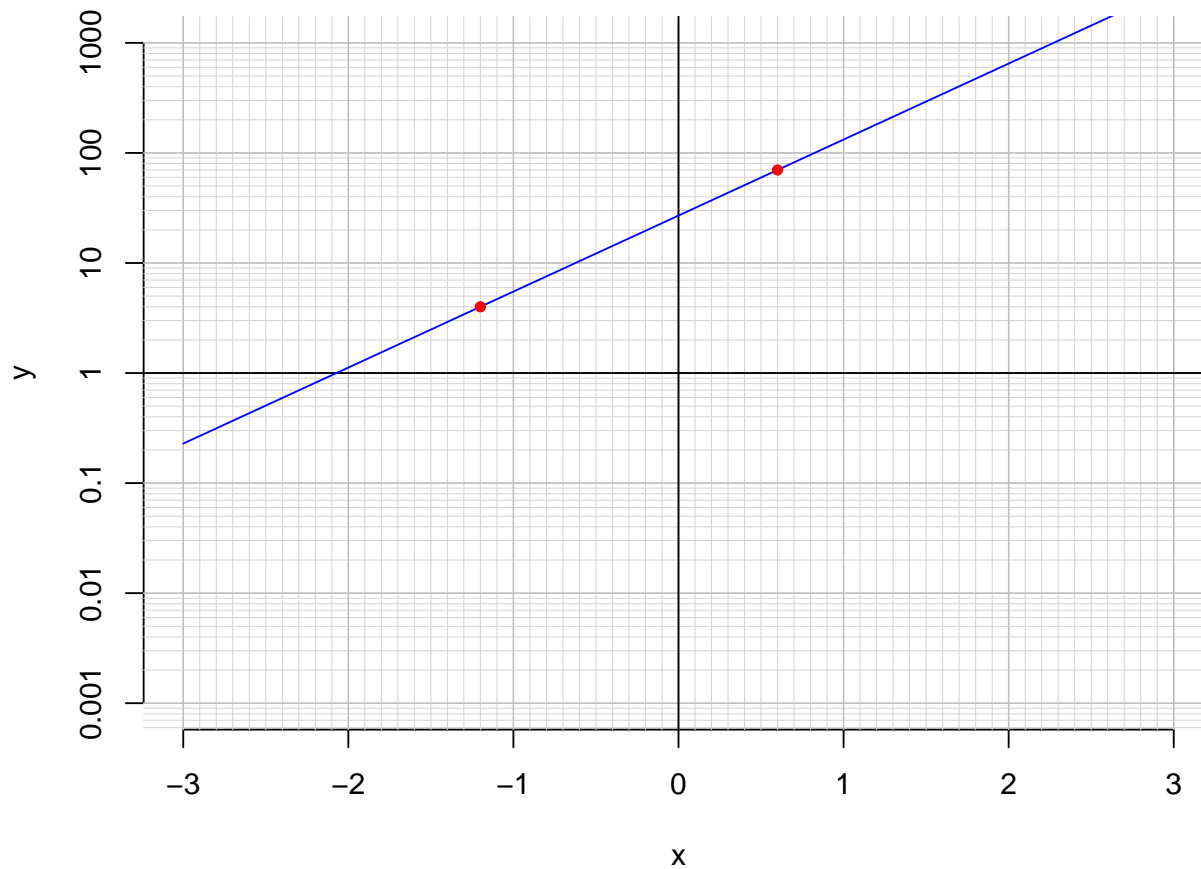
Divide both sides by $\frac{3}{7}$.

$$\frac{7}{3} \cdot \log_{10} \left(\frac{17 \cdot 4}{5} \right) = t$$

Switch sides.

$$t = \frac{7}{3} \cdot \log_{10} \left(\frac{17 \cdot 4}{5} \right)$$

3. An exponential function $f(x) = 27 \cdot e^{1.59x}$ is graphed below on a semi-log plot.



- a. Using the plot above, evaluate $f(0.6)$.

$$f(0.6) = 70$$

- b. Express $f^{-1}(x)$, the inverse of f .

$$f^{-1}(x) = \frac{1}{1.59} \cdot \ln\left(\frac{x}{27}\right)$$

- c. Using the plot above, evaluate $f^{-1}(4)$.

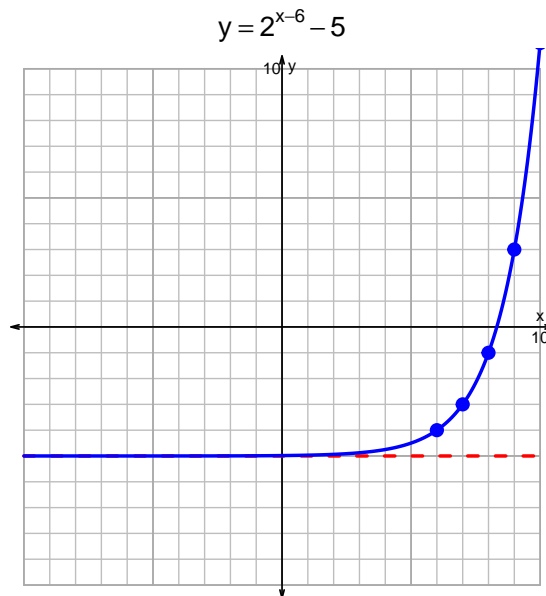
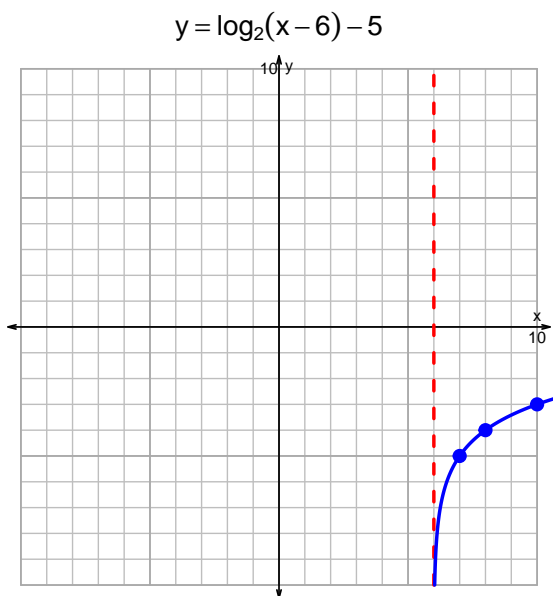
$$f^{-1}(4) = -1.2$$

Name: _____

Date: _____

s18QUIZ: EXP LOG (SOLUTION v8)

1. Graph $y = \log_2(x - 6) - 5$ and $y = 2^{x-6} - 5$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$19 = \left(\frac{4}{5}\right) \cdot 2^{3t/7}$$

Divide both sides by $\frac{4}{5}$.

$$\frac{19 \cdot 5}{4} = 2^{3t/7}$$

Take log, base 2, of both sides.

$$\log_2 \left(\frac{19 \cdot 5}{4} \right) = \frac{3t}{7}$$

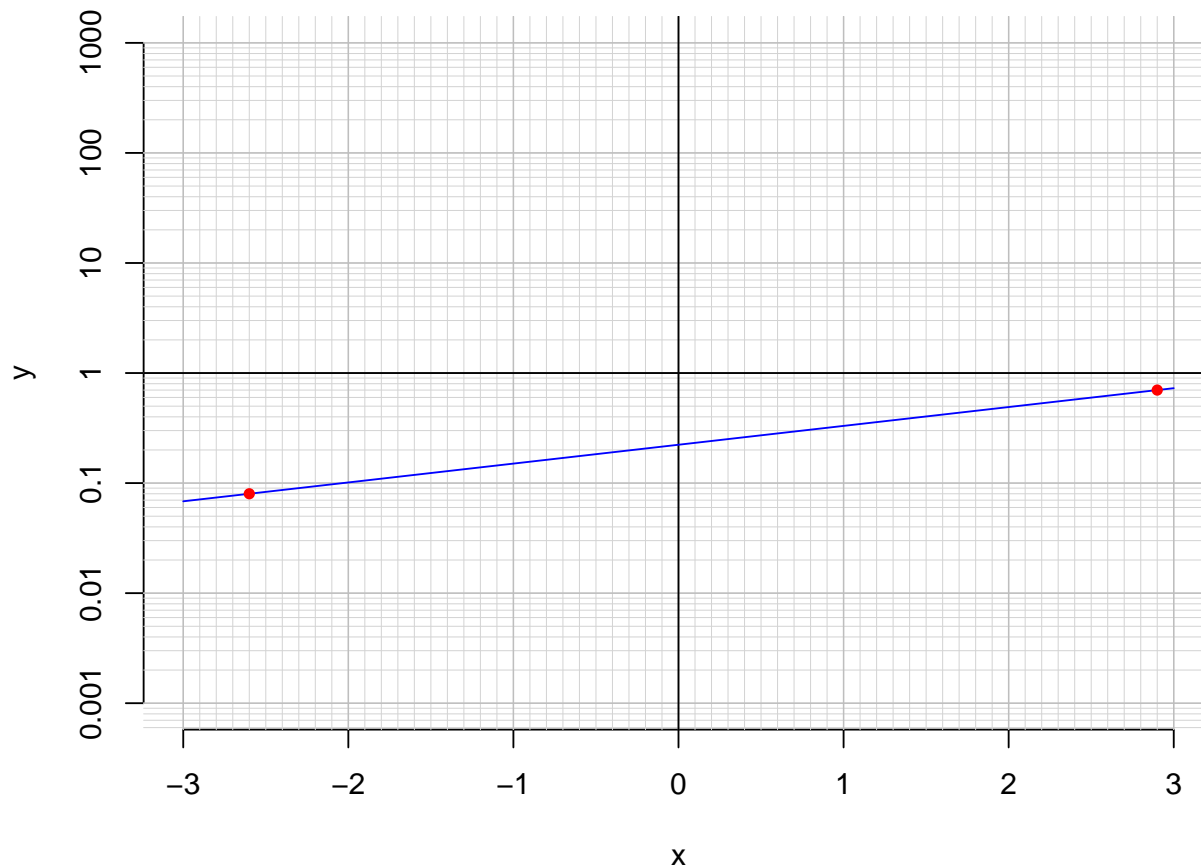
Divide both sides by $\frac{3}{7}$.

$$\frac{7}{3} \cdot \log_2 \left(\frac{19 \cdot 5}{4} \right) = t$$

Switch sides.

$$t = \frac{7}{3} \cdot \log_2 \left(\frac{19 \cdot 5}{4} \right)$$

3. An exponential function $f(x) = 0.223 \cdot e^{0.394x}$ is graphed below on a semi-log plot.



- a. Using the plot above, evaluate $f(2.9)$.

$$f(2.9) = 0.7$$

- b. Express $f^{-1}(x)$, the inverse of f .

$$f^{-1}(x) = \frac{1}{0.394} \cdot \ln\left(\frac{x}{0.223}\right)$$

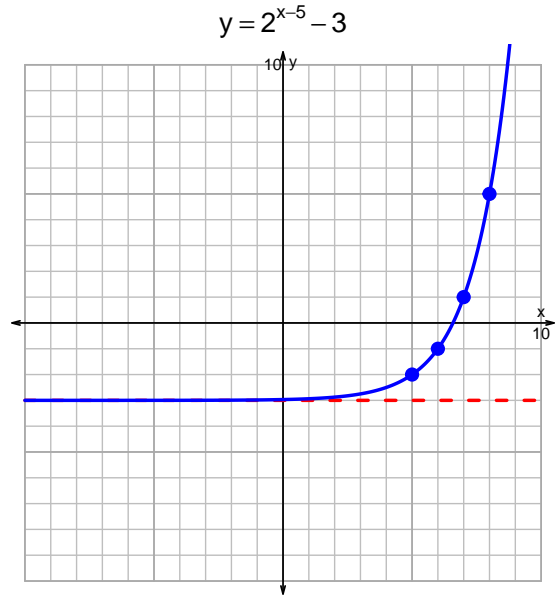
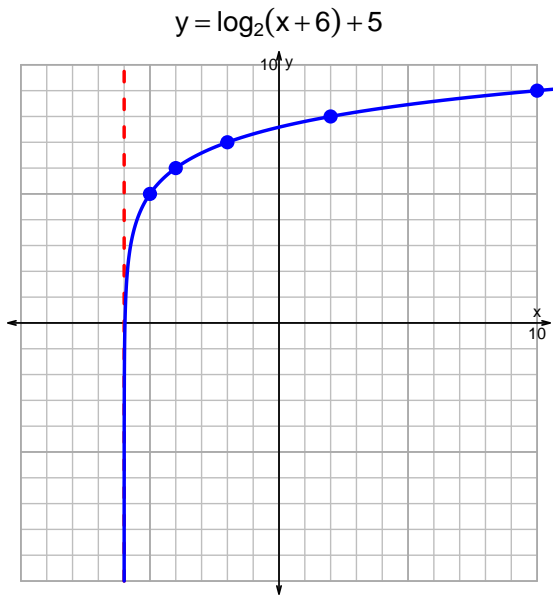
- c. Using the plot above, evaluate $f^{-1}(0.08)$.

$$f^{-1}(0.08) = -2.6$$

Date: _____

s18QUIZ: EXP LOG (SOLUTION v9)

1. Graph $y = \log_2(x + 6) + 5$ and $y = 2^{x-5} - 3$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$19 = \left(\frac{7}{3}\right) \cdot 10^{4t/5}$$

Divide both sides by $\frac{7}{3}$.

$$\frac{19 \cdot 3}{7} = 10^{4t/5}$$

Take log, base 10, of both sides.

$$\log_{10} \left(\frac{19 \cdot 3}{7} \right) = \frac{4t}{5}$$

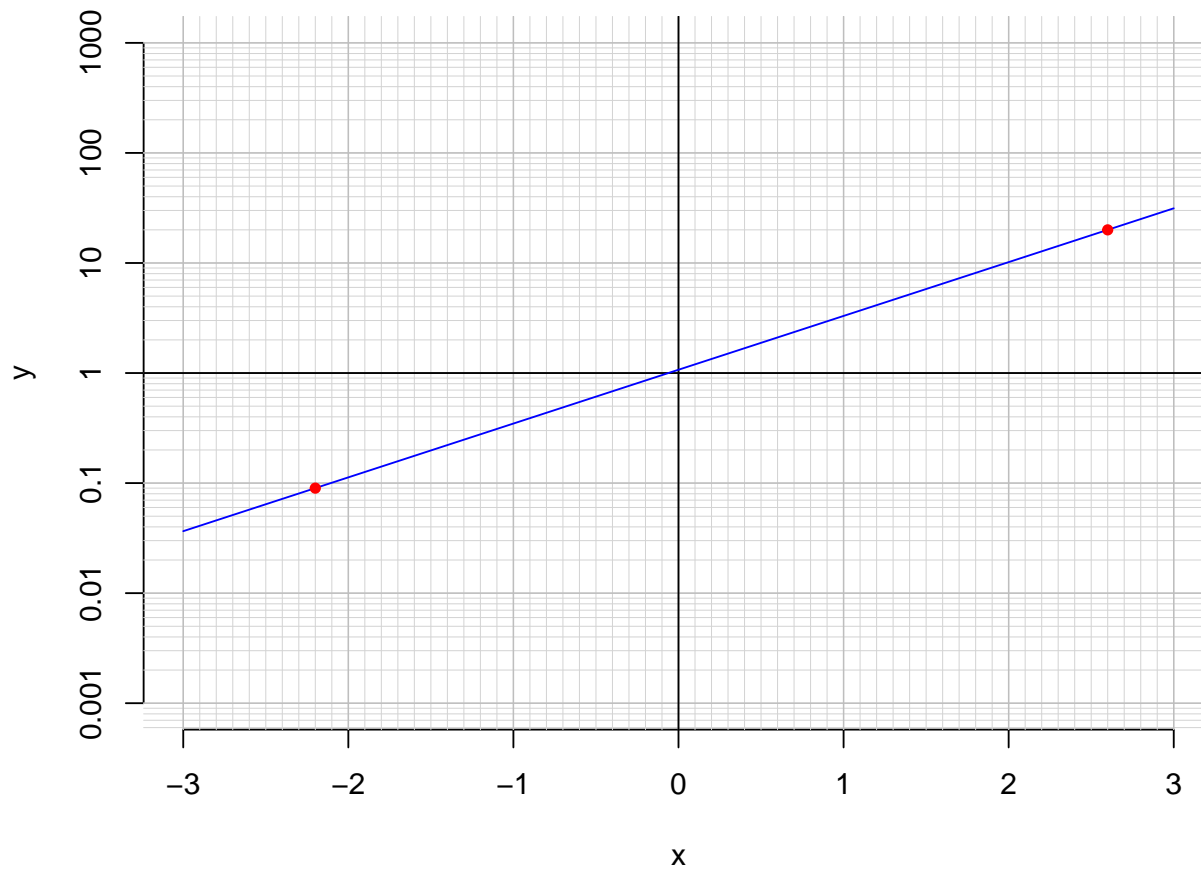
Divide both sides by $\frac{4}{5}$.

$$\frac{5}{4} \cdot \log_{10} \left(\frac{19 \cdot 3}{7} \right) = t$$

Switch sides.

$$t = \frac{5}{4} \cdot \log_{10} \left(\frac{19 \cdot 3}{7} \right)$$

3. An exponential function $f(x) = 1.07 \cdot e^{1.13x}$ is graphed below on a semi-log plot.



- a. Using the plot above, evaluate $f(2.6)$.

$$f(2.6) = 20$$

- b. Express $f^{-1}(x)$, the inverse of f .

$$f^{-1}(x) = \frac{1}{1.13} \cdot \ln\left(\frac{x}{1.07}\right)$$

- c. Using the plot above, evaluate $f^{-1}(0.09)$.

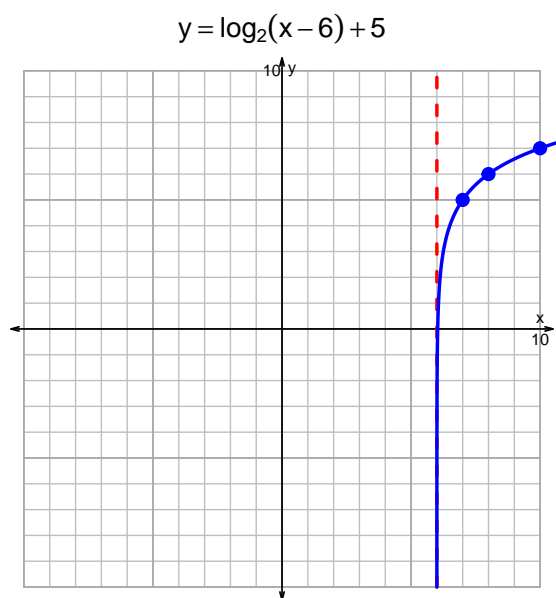
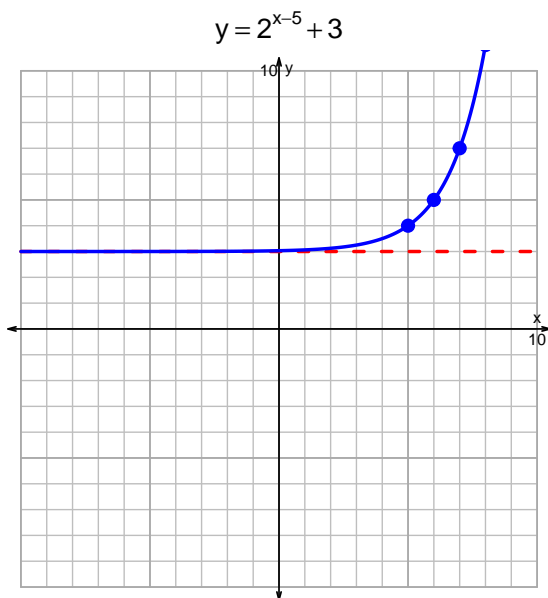
$$f^{-1}(0.09) = -2.2$$

Name: _____

Date: _____

s18QUIZ: EXP LOG (SOLUTION v10)

- Graph $y = 2^{x-5} + 3$ and $y = \log_2(x - 6) + 5$ on the grids below. Also, draw any asymptotes with dotted lines.



- Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$-23 = \left(\frac{-7}{5}\right) \cdot 2^{3t/4}$$

Divide both sides by $\frac{-7}{5}$.

$$\frac{23 \cdot 5}{7} = 2^{3t/4}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{23 \cdot 5}{7}\right) = \frac{3t}{4}$$

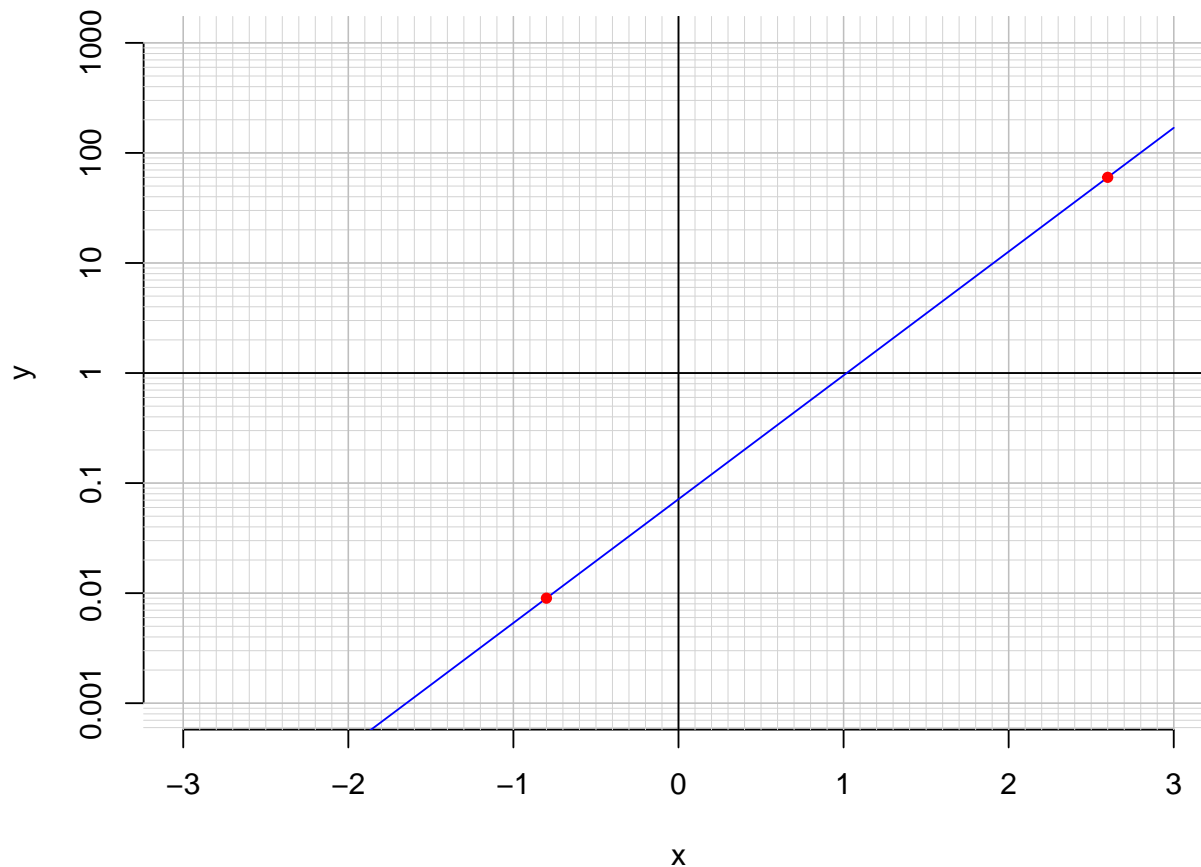
Divide both sides by $\frac{3}{4}$.

$$\frac{4}{3} \cdot \log_2\left(\frac{23 \cdot 5}{7}\right) = t$$

Switch sides.

$$t = \frac{4}{3} \cdot \log_2\left(\frac{23 \cdot 5}{7}\right)$$

3. An exponential function $f(x) = 0.0714 \cdot e^{2.59x}$ is graphed below on a semi-log plot.



- a. Using the plot above, evaluate $f(2.6)$.

$$f(2.6) = 60$$

- b. Express $f^{-1}(x)$, the inverse of f .

$$f^{-1}(x) = \frac{1}{2.59} \cdot \ln\left(\frac{x}{0.0714}\right)$$

- c. Using the plot above, evaluate $f^{-1}(0.009)$.

$$f^{-1}(0.009) = -0.8$$